UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

Refer to:
OSB1998-0021

August 17, 1998

W.B. Paynter
U.S. Army Corps of Engineers
Portland District, CENWP-CO-GP
P.O. Box 2946
Portland, OR 97208-2946

Re: Consultation on West Fork Smith River adult salmonid trap construction (COE 98-852), Douglas County, Oregon

Dear Mr. Paynter:

This concludes our correspondence regarding the effects on Umpqua River cutthroat trout (UR cutthroat) and Oregon Coast coho salmon (OC coho) of issuance of a Section 404(b)(1) permit (COE 98-852) to construct an adult coho salmon trap on the West Fork Smith River (West Fork). The trap would be located near Scottsburg, Douglas County, Oregon, on the West Fork at River Mile 1.0. The permit applicant is the Oregon Department of Fish and Wildlife (ODFW), which proposes to construct the trap in the late summer/early fall of 1998 for its Coastal Coho Population and Habitat Monitoring Program. The operation of this trap will help fulfill monitoring requirements of the Oregon Plan. The trap will target adult coho, but since it will be a complete fish barrier, juvenile OC coho as well as other species such as UR cutthroat will also be affected by the trap.

The UR cutthroat was listed by the National Marine Fisheries Service (NMFS) under the Endangered Species Act (ESA) as endangered on August 9, 1996 (61 FR 41514). Critical habitat for UR cutthroat was designated by the NMFS on January 9, 1998 (63 FR 1338). OC coho was listed by the NMFS under the ESA as threatened on August 10, 1998 (63 FR 42587), with an effective listing date of October 9, 1998. Critical habitat for OC coho has not yet been proposed. Both UR cutthroat and OC coho

occur in the West Fork, near the lower end of the Umpqua River Basin. This consultation is undertaken under section 7(a)(2) of the ESA, and its implementing regulations, 50 CFR Part 402.

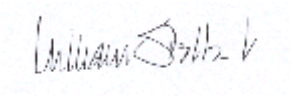
In a letter dated July 10, 1998, the Portland District of the U.S. Army Corps of Engineers (COE) requested informal consultation on the application ODFW to construct the trap, which would require about 20 cubic yards (cy) of excavation and about 25 cy of fill. Construction was proposed to be conducted in the dry, behind sandbag cofferdams. In discussions between the

NMFS, COE, and ODFW, it was determined that while the construction of the trap is not likely to adversely affect UR cutthroat, trap operation (which is an interdependent action) is likely to adversely affect this species. The NMFS formally transmitted this determination in a letter dated August 10, 1998. Discussions between the ODFW and the NMFS further refined the proposed action. Although the COE only requested consultation on UR cutthroat, because OC coho were listed after your initiation letter, we also analyzed the effects of the proposed action on coho salmon.

Enclosed is the Biological Opinion on your issuance of 404(b)(1) permit to ODFW, authorizing the incidental take of UR cutthroat that may be caused by this action, provided that the terms and conditions of the incidental take statement are met. This opinion also covers the incidental take of juvenile OC coho because the operation of the trap may also result in the incidental take of this life stage of OC coho. The incidental take permit does not cover the directed take of OC coho. ODFW (not the COE) will be required to obtain a Section 10(a)(1)(A) research or enhancement permit for directed take of OC coho if and when a 4(d) rule is proposed. Please contact Garth Griffin of NMFS' Protected Resources Division at 503/231-2005 for information regarding Section 10 permits.

If you have any questions regarding this opinion, please contact Dan Kenney, Fishery Biologist, of my staff at 541/957-3385.

Sincerely,



William Stelle, Jr.
Regional Administrator

Enclosures

cc: Mike McCabe, Oregon Division of State Lands
Bruce Miller, Oregon Department of Fish and Wildlife
Steve Wille, U.S. Fish and Wildlife Service

Endangered Species Act - Section 7
Consultation

BIOLOGICAL OPINION

Effects of the Construction and Operation of an Adult Fish Trap (COE ID #98-852) in the West Fork Smith River on Umpqua River Cutthroat Trout and Oregon Coast Coho Salmon

Agency: Portland District, U.S. Army Corps of Engineers

Consultation Conducted By: National Marine Fisheries Service, Northwest Region

Date Issued: August 17, 1998

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I. Background

The Umpqua River cutthroat trout (UR cutthroat), (*Oncorhynchus clarki clarki*) was listed by the National Marine Fisheries Service (NMFS) under the Endangered Species Act (ESA) as endangered on August 9, 1996 (61 FR 41514). Critical habitat for UR cutthroat was designated by the NMFS on January 9, 1998 (63 FR 1338). Oregon Coast coho salmon (OC coho) was listed by the NMFS under the ESA as threatened on August 10, 1998 (63 FR 42587), with an effective listing date of October 9, 1998. Critical habitat for OC coho has not yet been proposed. UR cutthroat occur in the Umpqua River Basin in southwest Oregon, while OC coho occur from Cape Blanco north to the mouth of the Columbia River.

In a letter dated July 10, 1998, the Portland District of the U.S. Army Corps of Engineers (COE) requested informal consultation on the Clean Water Act 404(b)(1) application (COE ID #98-852) of the Oregon Department of Fish and Wildlife (ODFW) to construct an adult salmonid trap on the West Fork of the Smith River (West Fork) in Douglas County, at River Mile 1.0. Construction of the trap would require excavation of the bedrock stream bottom (approximately 20 cubic yards [cy]), pouring of three concrete sills and a trap box, and placement of riprap (approximately 25 cy). Construction is proposed to occur in the late summer/early fall of 1998, when river flows are low enough to construct sandbag cofferdams around the construction area, so that in-channel work could be conducted in the dry. Attached to the COE's July 10 letter was a copy of ODFW's Joint Permit Application Form (dated July 1, 1998) which described the proposed action. In discussions between the NMFS, COE, and ODFW, it was determined that while the construction of the trap is not likely to adversely affect UR cutthroat, trap operation has more than a negligible potential to adversely affect this species. The NMFS formally transmitted this determination in a letter dated August 10, 1998, stating that the ODFW would provide further information to complete the consultation. In the interim, however, modifications to the original construction plan were suggested and accepted in July 31, 1998 memoranda between the NMFS and ODFW. Additional information has been provided to the NMFS by ODFW through telephone conversations and facsimile documents.

The COE requested consultation on the effects of the 404(b)(1) permit on UR cutthroat, which were considered to be associated with the construction of the trap. Since the initiation of consultation, however, OC coho were listed under the ESA as threatened, so this consultation will also consider that species. In addition, the existence/operation of the trap is an interrelated action to the construction of the structure, so this consultation will also consider the effects of the operation of the trap on listed anadromous fish species.

The purpose of the the proposed trap is to capture and enumerate adult OC coho as part of ODFW's Coastal Coho Population and Habitat Monitoring Program. The operation of this trap will help fulfill monitoring requirements of the Oregon Plan. The trap will target adult coho, but since it will be a complete fish barrier, juvenile OC coho as well as other species such as UR cutthroat will also be affected by the trap. Thus the operation of the trap is likely to result in direct take of adult OC coho, and incidental take of juvenile OC coho as well as adult and juvenile UR cutthroat. A permit to directly

or intentionally take individuals of an ESA-listed species for which take is prohibited under Section 9 of the ESA can be obtained from the NMFS, for research or enhancement purposes, pursuant to Section 10(a)(1)(A) of the ESA. Because the Section 9 take prohibition has not yet been conferred upon threatened OC coho, no directed take permit (i.e., Section 10 permit) is required to take adult OC coho during operation of the trap until this protection is conferred under ESA Section 4(d).

The objective of this biological opinion is to determine whether the construction and operation/existence of the adult salmonid trap on the West Fork is likely to jeopardize UR cutthroat, listed as endangered under the ESA, or OC coho, listed as threatened under the ESA, or result in destruction or adverse modification of designated critical habitat for UR cutthroat. Although NMFS expects some effects to individual fish and their habitat from these actions, the effects to essential habitat are expected to be insignificant because of project design, and substantial adverse effects to individual UR cutthroat and OC coho are expected to be rare. The overall effect of the action is likely to be beneficial, in that substantial information on anadromous salmonid species in the West Fork will be obtained.

II. Proposed Action

The "proposed action" is issuance of an individual permit under Section 404(b)(1) of the Clean Water Act for the construction and operation of the West Fork trap on the West Fork of the Smith River, Douglas County, Oregon. The trap will target and enumerate adult OC coho salmon. The permit would allow ODFW to excavate up to 20 cy of West Fork channel (mostly soft bedrock) at the proposed trap site at River Mile 1.0. Fill of up to 25 cy would also be permitted. The fill would consist of poured concrete; steel bolts and other apparatus; and riprap. The trap would be of the floating resistance board type, and would consist of a concrete trap box, two concrete and steel weirs, with stoplogs (to provide hydraulic head to the trap box), and a weir attachment sill. The trap would be one of several used in ODFW's Coho Life-Cycle Monitoring Project, which is an integral part of the Oregon Coastal Salmon Restoration Initiative.

The concrete trap box would be approximately 44 feet long, six feet high and parallel to the current, on the west bank of the West Fork. The trap box would have an entrance of about 10 feet in width, opening parallel to the current; once in the entrance box, fish would pass over a steel vertically-adjusting picket weir (1.25-inch clearance between bars) into a false-bottomed collection box. At the head of the collection box would be a set of vertical pickets (1.25-inch clearance), and a gate valve, which would provide adjustable flow into the collection box. Above the collection box would be a steel trashrack, with a 1.25-inch clearance between bars, that would be set at about a 30° downstream angle from the bedrock streambank to the outside corner of the collection box. An 8-foot-long wing wall would extend directly upstream from the outside corner of the collection box. A manual crowder would be used in the collection box to facilitate fish capture, and sampled fish would be manually transferred in a net back to the river. Except during sampling, a "grip-strut" grating would cover the

trap box. Riprap fill would be placed between the trap box and the bedrock streambank to prevent water and fish from passing around the outside edge of the trap.

To provide hydraulic head to the trap box, two weirs would be constructed from the trap box perpendicularly across the stream to the east bank. The weirs would consist of concrete footings onto which steel stanchions would be attached. The stanchions would hold wooden stoplogs to raise the head. The stanchions would be affixed to the concrete footings with bolts, so that the stanchions and stoplogs could be removed to facilitate movement of bedload. Construction of the concrete footings would require excavation of two trenches into the bedrock, which would then be filled with concrete flush (with the exception of steps at the thalweg) to the existing stream bottom; bolts would be set in the concrete to allow attachment of the stanchions. The upstream weir would extend from the upstream end of the trap box wing wall across the river about 45 feet to the east shoreline; the second weir would be constructed 16 feet downstream of the upper weir. Riprap would be used between the east bank and each of the weirs to prevent water and fish passage at these sites. Each of the two weirs would generate about one foot of hydraulic head.

About 16 feet downstream of the lower hydraulic head weir, an attachment sill for the floating resistance board weir would be constructed through excavation of bedrock and poured concrete. The downstream end of the resistance board weir would float, while the upstream end would be attached to and pivot on the sill, so that a barrier to the passage of large adult fish would result. The resistance boards would be constructed of PVC pipe panels, with a 1.25 inch clear space between the PVC pipes. Like the hydraulic head weirs, the resistance board weir sill would extend from the trap box across the river about 44 feet toward the east shoreline. In order to fit tightly with the resistance board weir, the sill would be level along the length of its crest. This design would necessitate that the sill extend from the stream bottom at the thalweg (about 12 linear feet) from about 12 to 18 inches, while the remaining 32 linear feet of the sill would extend about 3 inches from the stream bottom. In order to pass bedload and prevent sediment accumulation, the 12 linear feet of sill at the thalweg would be tapered upstream and downstream about 6 feet; the sill for the remainder of the width of the river would have vertical sides. Two or three 24-inch round metal culverts, cut in half length-wise and cast into the sill concave side down, would be placed flush with the thalweg, to concentrate flow and thus provide fish passage through the sill at extremely low water levels. These culverts would be blocked during trap operation. Near the east shoreline, the sill would tie into a concrete foundation for stanchions, which would be about 20 feet in length and parallel to the river. Wood stoplogs would be placed in the stanchions to form a wing wall that would prevent fish from passing around the east end of the weir. On the east side of this wing wall, an angle-iron and steel conduit picket weir (1.25-inch clearance between conduit) would be placed perpendicular to the river's flow on tripods (i.e., not bolted to bedrock). This picket weir would be about 12 feet in length, and would prevent large fish from passing around the wing wall at higher water levels.

To form a channel to guide fish into the trap box, and to provide a resting pool for fish, ODFW proposes to excavate up to about 18 vertical inches of bedrock in an area below the weir attachment

foundation and extending into the trap box. This excavated channel/pool would be roughly 25 by 50 feet in area.

ODFW proposes to construct the trap in August and September of 1998, when West Fork flows should be at their lowest. Although the stream bottom at the site is composed of bedrock, ODFW believes that the rock is soft enough to be excavated using an hydraulic ripper (attached to an excavator or other heavy machinery). To prevent the introduction of sediment and toxic substances (such as green concrete) into the stream, ODFW plans to isolate the work areas with cofferdams constructed of sandbags. This should allow the work to occur in the dry. It is anticipated that half of the site could be isolated with a cofferdam, while allowing the river to flow through the other half of the stream channel. After work is completed within the first cofferdam, a second cofferdam would be constructed on the other side of the stream channel, allowing the river to flow over the first construction area after the concrete has cured and any hazardous materials are cleaned up.

After construction of the trap is completed, ODFW plans to fish the trap annually from about the first week of October into the following spring, until as late as the end of May. The trap would be sampled on at least a daily basis. If accumulations of leaves, twigs, and other debris occur, the resistance board weir can be manually depressed to allow the debris to wash downstream. When the trap is not operated (in the late spring, summer, and early fall), resistance board panels, stoplogs, stanchions, etc., would be removed from the trap to prevent potential adverse effects to aquatic organisms.

III. Biological Information and Critical Habitat

The listing status, biological information, and critical habitat elements for UR cutthroat and OC coho are described in Attachment 1 (NMFS [1997b], see Table of Contents for full title). Some site-specific information is provided below.

UR cutthroat inhabit the Umpqua River Basin of southwest Oregon, including the Smith River and the Evolutionarily Significant Unit (ESU) consists of resident, potamodromous, and anadromous life histories. Individuals of all three forms have the potential to inhabit the West Fork in the vicinity of the proposed trap site. Spawning by UR cutthroat is not known to occur at the trap site (because of low gradient, bedrock substrate, and mainstem location), but the area is used as a migration corridor by both adults and juveniles of the ESU. Additionally, the site may provide some feeding habitat for adult UR cutthroat and rearing habitat for juveniles, although such bedrock flats or glides are likely to provide little food and cover.

Historically, adult anadromous cutthroat trout passed Winchester Dam (on the North Umpqua River) predominantly from late June through November, with peaks in mid-July and mid-October, while juvenile outmigration is thought to occur chiefly from March through October (Johnson et al. 1994). Adult migration patterns in the Smith River are not known, but Trotter (1997) reports that adult sea-run

cutthroat trout have been documented migrating into streams from July through March. A smolt trap operated just below the trap site captured juvenile cutthroat trout (some of which were smolted) from early March through the first week of June 1998 (Bruce Miller, ODFW, personal communication, 8/12/98). While the lower West Fork (including the trap site) has water temperatures suitable for salmonid habitation during the low flow period of late summer and early fall, salmonids have not been observed at the site in the summer of 1998 (Bruce Miller, ODFW, personal communication, 8/12/98). Salmonids are known to inhabit the riffle and pool areas both above and below the trap site, but the flat, wide glide at the site provides little or no cover or food, and would likely be avoided by non-migrating salmonids in favor of nearby superior habitat.

OC coho are an anadromous species which typically have a three-year life-cycle. Adults spawn in the late fall and winter, with fry emergence occurring the following spring. Juvenile coho salmon rear for about a year in natal streams, and then outmigrate to the ocean as smolts in the spring. An ODFW smolt trap on the West Fork (located just below the adult trap site) captured coho salmon smolts and fry from early March through the second week and third weeks of June 1998, respectively (Bruce Miller, ODFW, personal communication, 8/12/98). Some male coho return to freshwater to spawn the fall and winter of the same year as their smolt migration, but the majority of adult OC coho do not return to spawn until having spent about 18 months in the ocean. Adult coho typically enter the West Fork for spawning from November into January, but, as noted above, the trap site does not provide suitable spawning habitat. Coho spawning habitat on the West Fork is thought to occur some distance upstream of the trap site on the mainstem, and in tributaries (Bruce Miller, ODFW, personal communication, 8/12/98). It is possible that the trap site provides some rearing habitat for juvenile OC coho (see discussion under UR cutthroat, above), but the predominant use of the area by coho would be as a migration corridor by both adults and smolts.

IV. Evaluating Proposed Actions

The standards for determining jeopardy are set forth in Section 7(a)(2) of the ESA as defined by the consultation regulations (50 C.F.R. Part 402). Attachment 2 (NMFS [1997a], see Table of Contents for full title) describes how NMFS applies the ESA jeopardy and destruction/adverse modification of critical habitat standards to consultations for Federal land management actions in the Umpqua River basin.

As described in Attachment 2, the first steps in applying the ESA jeopardy standards are to define the biological requirements of listed or proposed species and to describe the species' current status as reflected by the environmental baseline. In the next steps, NMFS' jeopardy analysis often considers how proposed actions are expected to directly and indirectly affect specific environmental factors that define properly functioning aquatic habitat essential for the survival and recovery of the species. This type of analysis is set within the dual context of the species' biological requirements and the existing conditions under the environmental baseline (defined in Attachment 1). Such an analysis takes into

consideration an overall picture of the beneficial and detrimental activities taking place within the action area. In this proposed action, however, NMFS has determined that potential effects of the action on environmental factors are a less likely cause of harm to the listed species than direct physical injury. If direct physical injury or mortality to individuals of these species or the net effect on the environmental baseline of the proposed activity is found to jeopardize the listed species, then NMFS must identify any reasonable and prudent alternatives to the proposed action.

A. Biological Requirements

For this consultation, NMFS finds that the biological requirements of UR cutthroat and OC coho are best expressed in terms of current population status. This information is summarized in Attachment 1. As discussed in III., above, UR cutthroat and OC coho use the subject portion of the West Fork primarily as a migration corridor, and possibly as juvenile rearing and adult UR cutthroat feeding habitat. Therefore, the environmental factors that define properly functioning migration, rearing, spawning, and incubation habitat are necessary for survival and recovery of the species. Individual environmental factors include water quality, habitat access, physical habitat elements, channel condition, and hydrology. Although it is not relevant to this action, properly functioning watersheds, where all of the individual factors operate together to provide healthy aquatic ecosystems, are also necessary for the survival and recovery of the listed/
proposed species. This information is also summarized in Attachment 1. As discussed in "V. Analysis of Effects", below, the NMFS does not expect that the trap construction will substantially adversely affect any of the environmental factors or essential features of UR cutthroat or OC coho habitat.

B. Environmental Baseline

Current range-wide status of UR cutthroat and OC coho under environmental baseline. NMFS described the current population status of the UR cutthroat and OC coho in its status reviews (Johnson et al. 1994, and Weitkamp et al. 1995, respectively) and in the UR cutthroat final rule (August 9, 1996, 61 FR 41514) and the OC coho proposed and final rules (July 25, 1995, 60 FR 38011; and August 10, 1998, 63 FR 42587). Critical habitat for UR cutthroat was designated by the NMFS on January 9, 1998 (63 FR 1338). The recent range-wide status of these species is summarized in Attachment 1.

Current status of UR cutthroat and OC coho under environmental baseline within the action area. The "action area" is defined as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action" (50 CFR 402.02). The general action area can be defined as the Smith River basin.

As noted above, UR cutthroat and OC coho use the action area primarily as a migration corridor and, possibly, as juvenile rearing and adult (cutthroat) feeding habit. Construction and existence/operation of the adult trap on the lower West Fork has the potential to affect upstream and downstream passage of anadromous salmonids, but the construction of the trap would adversely affect little, if any salmonid

habitat. Thus, while the environmental baseline of the Smith River basin is dominated by conditions rated largely as "at risk" or "not properly functioning" (based on assessments from Federal land management agencies), the proposed action would not likely affect the relatively poor baseline conditions. These conditions are likely the result of upstream forest management practices.

Based on the best information available on the current status of UR cutthroat and OC coho (Attachment 1), NMFS assumptions given the information available regarding population status, population trends, and genetics (see Attachment 2), and the relatively poor environmental baseline conditions within the action area (see the UR cutthroat final listing rule and OC coho proposed listing rule), NMFS concludes that not all of the biological requirements of the species within the action area are currently being met under the environmental baseline. Actions that do not retard attainment of properly functioning aquatic conditions, when added to the environmental baseline, are necessary to meet the needs of the species for survival and recovery.

V. Analysis of Effects

A. Effects of Proposed Action

The effects determination in many Opinions is made using a method for evaluating current aquatic conditions (the environmental baseline) and predicting effects of actions on them. While the full process is not appropriate in the current Opinion, because the subject action is unlikely to adversely affect the environmental baseline, this process is described in the document "Making ESA Determinations of Effect for Individual or Grouped Actions at the Watershed Scale" (NMFS 1996). This assessment method was designed for the purpose of providing adequate information in a tabular form for NMFS to determine the effects of actions subject to consultation. The effects of actions are expressed in terms of the expected effect (restore, maintain, or degrade) on aquatic habitat factors in the project area.

The results of a completed checklist for a proposed action provides a basis for determining the overall effects on the environmental baseline in the action area. Effects to the environmental baseline from this action are expected to be insignificant (all aquatic habitat factors will be maintained) because of project design.

The principal potential effects of the proposed trap construction and existence/operation to UR cutthroat, OC coho, and UR cutthroat trout critical habitat are related to migration delay and handling of upstream migrating adults during operation of the trap. It is also possible that smaller-sized adult coho salmon and larger adult UR cutthroat trout could injure themselves in attempted passage through gaps in the floating resistance board weir, picket weirs, or the trash rack. If the trashrack, east bank picket weir, or resistance board weir collect enough debris, it is possible that salmon and trout fry could become impinged upon these structures. Relatively minor concerns include impacts associated with

construction, fish passage over the in-stream components of the trap during the trapping off-season, and passage of bedload through the trap weirs.

I. Injury, delay, and blockage due to trap operation. During operation of the trap, large salmonids (those more than 1.25 inches thick) should not be able to pass upstream through the trap, except through the trap box. Those fish collected in the trap would be crowded, netted, and handled in the collection of data (length, sex, condition), and then manually released upstream of the trap box trashrack. Trapped fish might also be tagged and/or marked. Fish would remain in the water in a trough while being handled, except for final transfer upstream of the trap; if tagged or marked, the handling time per fish would probably be about 1.5 minutes. Trapped fish would experience some level of stress from being confined in the collection box and from handling. Stress approaching or exceeding the physiological tolerance limits of individual fish can impair reproductive success, growth, resistance to infectious diseases, and general survival (Wedemeyer et al. 1990). Mechanical injury is also possible during holding, crowding, and handling.

Upstream-migrating fish smaller than 1.25 inches thick should be able to pass the resistance board weir, trap box, or east shore picket weir by swimming between weir bars. Some fish near the 1.25-inch thickness, however, may be able to pass only partway through the weir bars, and some may become caught between the bars, especially at the gills.

It is also possible that some fish may be unable to find the trap box entrance, due to trap design or hydraulic conditions, and fail to spawn in appropriate areas. It is also possible that some individual large anadromous salmonids might temporarily stray into the West Fork as far as the trap, even though their ultimate destination might be a different stream. If such an individual is trapped and released above the weir, that fish might not be able to reach its proper spawning area. Similarly, because UR cutthroat can be iteroparous, it is possible that larger individuals that are sampled in the trap and passed upstream may be too large to pass through the trap in a subsequent downstream migration.

Because of their relatively small size, most adult UR cutthroat would likely be able to pass through the resistance board weir or east bank picket weir during either upstream or downstream migration without injury. If UR cutthroat enter the collection box, spacing of weir bars should allow these fish to pass either upstream or downstream out of the box. For example, ODFW found that four and five adult sea-run cutthroat trout were captured in similar traps on Siletz and Alsea tributaries, respectively, that produced 1,000 or more smolts annually (Miller 1998); this suggests that most adults in these populations were able to pass adult cutthroat trout through 1.25-inch gap weirs. Similarly, many OC coho jacks should be able to pass through various trap components. Adult OC coho and larger jacks, on the other hand, would not be able to pass through the weir bars, and should be trapped within the collection box during passage.

Trapped OC coho (and large UR cutthroat) would suffer some level of injury and/or stress during holding, crowding, netting, handling, and tagging/marking. It is possible that some of these fish will be

injured or stressed to the point where survival or reproductive capability is impaired, but it seems unlikely that this will occur to more than a few individuals. The trap would be sampled daily (at a minimum), handling time would be minimal, and the fish would be close enough to spawning and in cold enough water that fungal or bacterial infections from handling seems unlikely to be a major factor. Survival beyond spawning is not a relevant factor for semelparous species such as coho salmon.

We have no data on the likelihood of "gilling" of adult UR cutthroat or jack OC coho, but have no reason to believe that this would be common. ODFW will be required to report any cutthroat or non-target coho known to have been injured or killed by the trap or by handling, so a significant amount of gilling or other injuries associated with weir passage may require reinitiation of consultation.

The degree of UR cutthroat and OC coho migration delay that might be associated with the operation of the West Fork trap is unknown, but can be presumed to be minor. As noted above, adult sea-run cutthroat trout are known to migrate upstream from mid-summer through late winter, but generally spawn from late winter to late spring (Trotter 1997). So, while it is likely that many or most adult UR cutthroat on a spawning migration to the West Fork would have to pass the trap, the actual spawning date for these fish may be weeks or months in the future. A short delay (a few hours or days) in passing the trap seems plausible, but, because of the general lack of temporal proximity, it seems unlikely that spawning success for most UR cutthroat would be substantially affected.

Unlike UR cutthroat, which are not currently a target species for ODFW's trapping study, OC coho migration and spawning in the West Fork should entirely overlap trap operation. Assuming that adult salmon respond to the trap as expected, delay at the trap should amount to less than a day. A NMFS hydraulic engineer reviewed ODFW's design, and suggested modifications that should improve the efficiency and safety of the trap. However, because high turbidity is likely during at least a portion of the West Fork coho salmon spawning migration (making visual observations difficult or impossible), ODFW may want to confirm the proper operation of the trap with a radio-telemetry study.

It is possible that some individual adult UR cutthroat or OC coho may not be able to pass the West Fork trap, because of a combination of idiosyncratic behavior and hydraulic conditions. In the case of UR cutthroat, such individuals may eventually pass upstream when the trap is removed during the off-season. Other stymied UR cutthroat and OC coho may be able to pass the trap at high flow levels, when the trap becomes inundated. Although spawning by either species is not known to occur in the mainstem West Fork below the trap site, it is possible that individuals that do not pass the trap may spawn in this stream reach or in another portion of the Smith River basin. A small amount of straying by sea-run cutthroat trout (Trotter 1987) and coho salmon (Sandercock 1991) has been documented in natural populations, so spawning of a few individuals in non-natal areas would not necessarily be detrimental to the ESUs.

II. Injury to juvenile outmigrants.

As noted above, juvenile UR cutthroat and OC coho outmigrate as smolts in the spring, when the trap is likely to be in operation. In addition, trout and salmon fry and non-migratory juveniles are likely to occur in the lower West Fork year-around. Although the 1.25-inch spacing between weir bars on the trap should allow juvenile salmonids to pass downstream through the trap safely, it is possible that accumulation of debris on trap components may sometimes create hydraulic conditions where small fish may become impinged.

While fish impingement due to debris accumulation is theoretically possible, this situation usually occurs in situations where the gap or mesh of a rack or screen is much smaller than that proposed for the West Fork trap. Also, the resistance board weir, with its shallow angle to the river surface and pivot, is designed to be self-cleaning: most large debris would be forced along and over the weir pipes by the current, and any large accumulation would force the weir under the surface, where the force of the current on the further-decreased angle weir angle should force debris along. In addition, the trap would be sampled a minimum of once a day, and except at the highest flow levels, ODFW staff would be able to clean all of the trap components on the same schedule. ODFW has also reviewed the operation of similar traps at other locations, and has found that little debris accumulation has been noted.

III. Other concerns. The potential for adverse affects to UR cutthroat and OC coho also occurs with the construction of the trap, passage of fish at the site during non-operational periods, and passage of bedload below the trap site.

Regarding trap construction, the fill, removal, and other activities within the West Fork channel have the potential to increase turbidity, sedimentation, and to introduce potentially toxic substances into the West Fork. Noise and vibration could also frighten fish in proximity to the site, and cofferdam construction could possibly trap and dewater individual trout and salmon.

Although most of the trap components would be removed from site during the late spring through early fall, when the trap would not be operating, some components would be permanently affixed to the stream bottom. Although the most of the concrete in the hydraulic head weirs would be flush with the stream bottom, bolts for stanchion attachment would protrude from the concrete. The attachment sill, more importantly, would protrude from 3 to 18 inches from the stream bottom, with a level crest. Thus, flow over the crest would be approximately the same depth over much of the 44-foot width of the sill, and because late summer minimum flow at the site is sometimes less than 1 cubic foot per second, such a low flow could equate to a depth of a fraction of an inch. Such a shallow depth has the potential to hinder up- and downstream movement of fish, especially adult UR cutthroat.

Finally, large and small sediment particles, from silt to boulders, move down streams, including the West Fork, due to hydraulic forces. If a structure blocks the movement of these particles, then the stream channel below the structure has the potential to become depauperate of sediment, especially the

larger particle sizes, called bedload. Although the three cross-stream structures proposed for the trap would be in place only part of the year, each has some potential to prevent bedload from moving past the site, in that trap operation will occur when the flows are highest, i.e., when most bedload movement occurs. Cessation or diminution of bedload movement past the trap has the potential to degrade fish habitat in the lower West Fork, in that bedrock stream substrate would become more prevalent.

Construction of water-tight cofferdams around should prevent the introduction of sediment, green concrete, fuel, etc. into the West Fork during construction. The stream channel is composed of relatively smooth bedrock, and streamflow volume should be low; both of these factors should be conducive to cofferdam construction. ODFW will also be required to follow Attachment 3 (ODOT [undated], ODOT General Minimization/Avoidance Measures), which lists general minimization and avoidance measures regarding in-water work, erosion control, hazardous materials, riparian impacts, and monitoring. These measures are used by the Oregon Department of Transportation, but are directly applicable to the proposal here addressed. Sediment inputs are likely to result from the proposed action due to in-water work, but are expected to be temporary and localized. Conditions required by the COE should also prevent long-term adverse impacts due to construction.

Noise and vibration, especially that associated with excavation of bedrock, has the potential to frighten fish in the West Fork, thereby interfering with feeding and contributing to stress levels. It seems unlikely, however, that the noise and vibration would occur to a debilitating level more than a few hundred feet from the site. As noted above, little suitable rearing/feeding habitat exists in the subject stream reach, and recent ODFW surveys of the area have not detected salmonids within close proximity to the proposed construction site (Miller 1998). The apparent lack of salmonids at the construction site should preclude individual UR cutthroat and OC coho from injury due to cofferdam construction, and an ODFW biologist will be present during construction, to ensure that salmonids would not be injured during construction.

During consultation, the possibility of hindrance of passage over the attachment sill during extreme low flows was discussed. In response to this concern, ODFW proposed the placement of several half-culverts through the sill. NMFS is satisfied that this design modification should facilitate passage at the lowest flow levels. Additionally during consultation, the potential for bedload retention by the cross-channel structures was recognized and discussed. If substantial accumulations of bedload occur above the weirs or sill, ODFW proposes to manually or mechanically remove the sediment, and place it below the trap sites.

B. Effects of Interrelated and Interdependent Actions. Interrelated and interdependent actions are those that would not occur but for the proposed action. The action that is specifically subject to consultation is the COE's 404(b)(1) permit for construction of the West Fork adult salmonid trap. Because the operation of the trap is an interdependent action, the potential effects of trap operation are discussed in detail in the Opinion. If ODFW does not build the trap at the West Fork site, then the monitoring and research dependent upon the trap will not occur. The West Fork trap is a

part of the Oregon Coastal Salmon Restoration Initiative's Life-Cycle Monitoring Project, which is expected to provide a portion of the information necessary to manage coastal anadromous salmonid populations into recovery. Thus, if the trap is not constructed, research that is believed by the State of Oregon and the NMFS to be vital for anadromous salmonid restoration would not be conducted.

C. Cumulative Effects. Cumulative effects are defined in 50 CFR 402.02 as "those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." The "action area" for this consultation is the Smith River drainage. Future Federal actions, including land management activities, are being (or have been) reviewed through separate section 7 consultation processes. In addition, non-Federal actions that require authorization under section 10 of the ESA will be evaluated in section 7 consultations. Therefore, these actions are not considered cumulative to the proposed action. NMFS is not aware of any future new (or changes to existing) State and private activities within the action area that would cause greater impacts to listed species than presently occurs. NMFS assumes that future private and State actions will continue at similar intensities as in recent years.

VI. Conclusion

NMFS has determined that, based on the available information, permitting of the construction of ODFW's proposed adult salmonid trap on the West Fork Smith River under Section 404(b)(1) of the Clean Water Act, is not likely to jeopardize the continued existence of UR cutthroat and OC coho, or result in the destruction or adverse modification of proposed critical habitat for UR cutthroat. NMFS used the best available scientific and commercial data to apply its jeopardy analysis (described in Attachment 2), when analyzing the effects of the proposed action on the biological requirements of the species relative to the environmental baseline (described in Attachment 1), together with cumulative effects.

In reaching this conclusion, NMFS determined that the survival and recovery of UR cutthroat and OC coho would not be appreciably diminished by the proposed action. This conclusion was reached primarily because: 1) the proposed construction would likely cause, at most, minor, short-term decreases in water quality, but the effects on the essential features of UR cutthroat and OC coho habitat are expected to be negligible; 2) direct disturbance of UR cutthroat and OC coho due to noise, etc. because of the construction would be minimal, due to the small area of the site and likely distribution of salmonids near the site during the construction period; and 3) while a few UR cutthroat and many OC coho would likely be delayed in passage and/or handled due to the existence/operation of the trap, little injury, mortality, or reduction in reproductive potential should occur, due to the design of the trap and careful handling/maintenance by ODFW staff. In the long-term, the monitoring and research of anadromous salmonid population characteristics in the West Branch (that is made possible because of the existence of the trap) should enhance the ability of the ODFW and NMFS to restore these populations.

VII. Reinitiation of Consultation

Based on the information provided, NMFS anticipates that an unquantifiable amount of incidental take could occur as a result of the actions covered by this Biological Opinion. To ensure protection for a species assigned an unquantifiable level of take, reinitiation of consultation is required: (1) if any action is modified in a way that causes an effect on the listed species that was not previously considered in the information provided and this Biological Opinion; (2) new information or project monitoring reveals effects of the action that may affect the listed species in a way not previously considered; or (3) a new species is listed or critical habitat is designated that may be affected by the action (50 CFR 402.16).

VIII. Conservation Recommendations

Section 7(a)(1) of the ESA directs Federal agencies to utilize their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of threatened and endangered species. Conservation recommendations are discretionary measures suggested to minimize or avoid adverse effects of a proposed action on listed species, to minimize or avoid adverse modification of critical habitat, or to develop additional information. The NMFS believes the following conservation recommendations are consistent with these obligations, and therefore should be implemented by the COE:

1. The COE should urge ODFW to investigate whether operation of the West Fork trap causes passage delay of ESA-listed species. Radio-telemetry is a possible method for this research.

2. The COE should urge ODFW to investigate the feasibility of sampling a substantial portion of the sea-run cutthroat trout run at the West Fork trap. The ability to sample adult UR cutthroat, along with the ability to sample juvenile UR cutthroat at the screw trap just downstream, and possibly other methods, should permit ODFW to conduct needed research on population size, smolt-adult return rates, importance of the anadromous component of the population, etc.

IX. References

Section 7(a)(2) of the ESA requires biological opinions to be based on "the best scientific and commercial data available." This section identifies the data used in developing this opinion, in addition to the BA.

Johnson, O.W., R.S. Waples, T.C. Wainwright, K.G. Neely, F. W. Waknitz, and L. T. Parker. 1994. Status review of Oregon's Umpqua River sea-run cutthroat trout. National Marine Fisheries Service, Coastal Zone and Estuarine Studies Division, Seattle, Washington.

Miller, B. 1998. Letter from Oregon Department of Fish and Wildlife to Bill Davis, Portland District, U.S. Army Corps of Engineers. July 17, 1998. 3 pp.

NMFS (National Marine Fisheries Service). 1996. Making Endangered Species Act determinations of effect for individual and grouped actions at the watershed scale. Habitat Conservation Program, Portland, Oregon.

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National Marine Fisheries Service (NMFS). 1997b. Biological requirements and status under 1996 environmental baseline: Umpqua River cutthroat trout, Oregon Coast coho salmon, Oregon Coast steelhead, Southern Oregon/Northern California coho salmon, Klamath Mountain Province steelhead, Lower Columbia steelhead, and chum salmon. NMFS, Northwest Region, Seattle, Washington. September, 1997.

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Sandercock, F.K. 1991. Life history of coho salmon (*Oncorhynchus kisutch*). Pages 395-446 *in* C. Groot and L. Margolis, editors. Pacific salmon life histories. University of British Columbia Press, Vancouver.

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Trotter, P.C. 1997. Sea-run cutthroat trout: life history profile. Pages 7-15 *in* J.D. Hall, P.A. Bisson, and R.E. Gresswell, editors. Sea-run cutthroat trout: biology, management, and future conservation. Oregon Chapter, American Fisheries Society, Corvallis.

Wedemeyer, G.A., B.A. Barton, and D.J. McLeay. 1990. Stress and acclimation. Pages 451-490 *in* C.B. Schreck and P.B. Moyle, editors. Methods for fish biology. American Fisheries Society, Bethesda, Maryland.

Weitkamp, L.A., T.C. Wainwright, G.J. Bryant, G.B. Milner, D.J. Teel, R.G. Kope, and R.S. Waples. 1995. Status review of coho salmon from Washington, Oregon, and California. U.S. Department of Commerce, NOAA Technical Memorandum NMFS-NWFSC-249, 258 pp.

X. Incidental Take Statement

Sections 4(d) and 9 of the ESA prohibit any taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct) of listed species without a specific permit or exemption. Harm is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, and sheltering. Harass is defined as actions that create the likelihood of injuring listed species to such an extent as to significantly alter normal behavior patterns which include, but are not limited to, breeding, feeding, and sheltering. Incidental take is take of listed animal species that results from, but is not the purpose of, the Federal agency or the applicant carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not considered prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement.

An incidental take statement specifies the impact of any incidental taking of endangered or threatened species. It also provides reasonable and prudent measures that are necessary to minimize impacts and sets forth terms and conditions with which the action agency must comply in order to implement the reasonable and prudent measures.

A. Amount or Extent of the Take

The NMFS anticipates that the action covered by this Biological Opinion (permitting of the construction of an adult salmonid trap on the West Fork Smith River) has more than a negligible likelihood of resulting in incidental take of Umpqua River cutthroat trout and Oregon Coast coho salmon because of the potential for injury and mortality to non-target species/life stages due to the construction, existence, and operation of the trap. Effects of actions such as these are largely unquantifiable in the short term, and are not expected to be measurable as long-term effects on the species' habitat or population levels. Therefore, even though NMFS expects some low level incidental take to occur due to the actions covered by this Biological Opinion, the best scientific and commercial data available are not sufficient to enable NMFS to estimate a specific amount of incidental take to the species itself. In instances such as these, the NMFS designates the expected level of take as "unquantifiable." Based on the information provided, NMFS anticipates that an unquantifiable amount of incidental take could occur as a result of the actions covered by this Biological Opinion.

B. Reasonable and Prudent Measures

The NMFS believes that the following reasonable and prudent measures are necessary and appropriate to minimize the take of UR cutthroat and OC coho.

1. The COE shall ensure that ODFW shall minimize the potential for direct incidental take of UR cutthroat and OC coho due to the effects of trap construction and existence/operation.

C. Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the ESA, the COE shall ensure compliance with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are non-discretionary.

1a. All general and specific conditions of trap construction placed on the 404(b)(1) permit by the COE shall be implemented by ODFW.

1b. Minimization/avoidance measures listed in Attachment 3 for in-water work, erosion control, hazardous materials, riparian impacts, and monitoring shall be implemented by ODFW for construction of the trap, in accordance with the terms and objectives of Attachment 3. Although Attachment 3 specifically deals with road-construction and maintenance activities of ODOT, the measures, terms, and objectives are directly applicable to the proposed construction.

1c. Any injury or mortality to UR cutthroat or non-target OC coho observed by ODFW as a result of trap existence/operation shall be reported to the NMFS within 7 days.

1d. Substantial accumulations (in excess of 5 cubic yards) of substrate particles of gravel size or larger above the weirs shall be removed by ODFW and transferred to the West Fork stream channel below the trap. This action may require a separate future COE 404(b)(1) permit and ESA consultation.

1e. An annual report detailing the results of trap operation, including injuries or mortality to UR cutthroat or non-target OC coho shall be provided by ODFW to NMFS during the ESA-listing period of these species.